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How well do environment-based models predict species abundances at a coarse scale?

Distribution modelling of species is a topic at the core of ecology and conservation biology. Typically, distribution models at coarse scales are based on a set of environmental variables that are used for predicting a species' presence/absence or abundance over geographic space. We tested the success of environmentally-based distribution models using abundance data from the North American Breeding Bird Survey. We judged model success by splitting the range of 190 bird species in east and west halves, using one for fitting the model and one for testing the predictions and vice versa. We showed that other designs for evaluating distribution models that either use the same data for fitting and evaluating the model or use a reserved evaluation data set that is a spatially random sub-sample of the total data set are overly optimistic. Accordingly, the success of environmental data-based distribution models has been overestimated in the current literature.

http://www.eeb.utoronto.ca/CSEE/talk_abstracts.html